

CAP18™ SITE SUMMARY

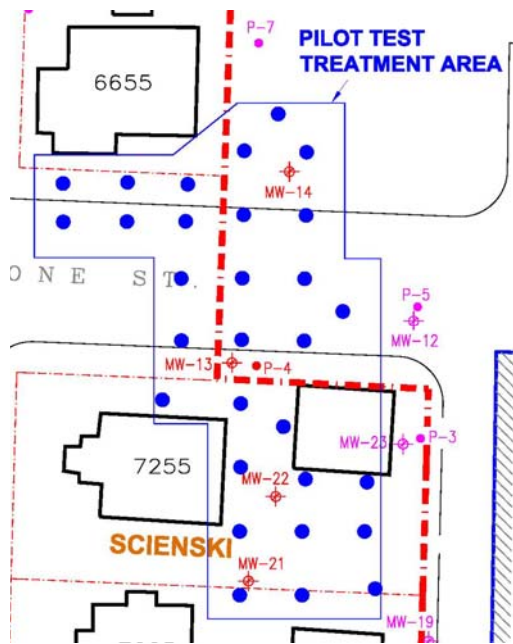


Site Name, Location: Confidential Manufacturing Site, southwestern Michigan
Consultant: SeaBreeze Technologies, LLC, Fishers, Indiana

SITE CONDITIONS AND APPROACH

TCE concentrations up to 42 mg/L were detected in groundwater in a residential area adjacent to a former tool and die shop. Soil consisted of glacial till with interbedded, heterogeneous zones of sand, silt and clay. Hydraulic conductivity was in the 10⁻⁵ cm/sec range.

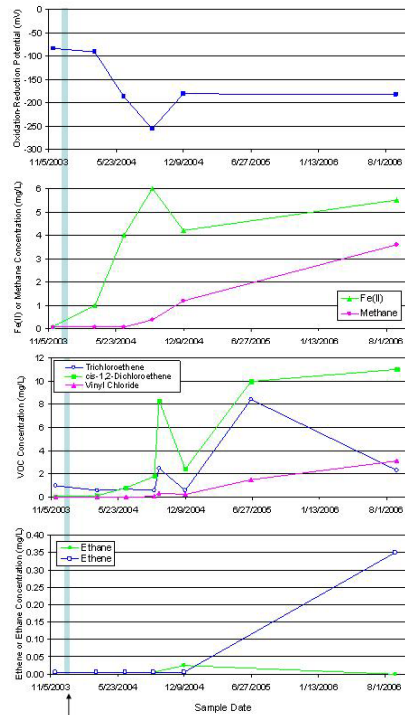
- *TCE concentrations up to 42 mg/L*
- *Glacial till soil, low permeability*
- *Residential Neighborhood*
- *6,800 lbs of CAP18™*
- *Direct push – 3 days of injection*



6,800 lbs of CAP18™ were injected over a 3-day period in December 2003. No heating was necessary in the cold air temperature. The injection was accomplished with a double-diaphragm pump. The 30 injection points were spaced 15-20 ft apart and were advanced with direct-push.

Post-treatment sampling was conducted quarterly for one year, and additional events have been conducted up to almost 3 years after the injection was completed.

RESULTS



Almost three years after injection, the groundwater conditions after the single injection continue to become more anaerobic. The ORP is stable at -200 mV, and Fe(II) and methane are increasing. Volatile fatty acids from the CAP18™ are detected at up to 105 mg/L. Water depth

measurements indicate no aquifer clogging. Cis-DCE, VC, and ethene are being formed, indicating complete dechlorination to ethene is occurring although DHE bioassays indicate low cell density. Monitoring at the site is ongoing.

- *Single injection of CAP18™*
- *Easy injection in cold weather and low permeability soils*
- *Strongly reducing conditions maintained for 3 years so far*
- *Complete dechlorination*

PRODUCTS THAT EMPOWER OUR CLIENTS

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